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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,424	11/26/2003	Mark J. Hampden-Smith	41890-01626	6234

7590 02/03/2006

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EXAMINER

VANOY, TIMOTHY C

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 02/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/723,424

Applicant(s)

HAMPDEN-SMITH ET AL.

Examiner

Timothy C. Vanoy

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-98 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-98 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06/28/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 1-98 in the reply filed on Jan. 13, 2006 is acknowledged.

Specification

- a) The applicants are required to complete the U. S. Provisional Patent Application Serial Number data set forth on pg. 1 lines 5-8 in the specification.
- b) The abstract is objected to because it does not set forth any of the steps of the elected invention. The abstract does not set forth that a carbon-based fuel is converted into an intermediate gas product via autothermal reforming, partial oxidation, catalytic partial oxidation or steam reforming. The abstract does not set forth that the intermediate gas product is contacted with an absorbent, such as CaO, to absorb the CO₂ and form a H₂-rich gas.
- c) It is requested to reduce the number of claims in this application to about 20 to 25 because examining 98 claims is unduly burdensome.

Claim Objections

- a) Claim 29 is objected to because there is no antecedent basis in the previous claim language for "said total mass of absorbent material".

Double Patenting

a) Claims 1-98 of this application conflict with claims 1-65 of Application No. 10-996,791. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

b) A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-98 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-43, 45 and 48-65 of copending Application No. 10-996,791. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

c) The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29

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USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-98 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-65 of copending Application No. 10-996,791. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of 10-723,424 and 10-996,791 disclose a method for converting a carbon-based fuel into a hydrogen-rich product gas, comprising:

- (a) providing a carbon-based fuel;
 - (b) converting the carbon-based fuel into an intermediate gas product by contacting the carbon-based fuel with at least a first conversion catalyst;
 - (c) contacting said intermediate gas product with an absorbent material to absorb CO₂ and form a H₂-rich gas;
 - (d) extracting said H₂-rich gas from said contacting step;
 - (e) regenerating said absorbent, and
 - (f) repeating said steps (a), (b), (c), (d) and (e) at least about 10 times,
- wherein said absorbent material retains at least about 50 mol. % of said theoretical absorption capacity after each of said repeating steps.

The difference between the claims of 10-723,424 and the claims of 10-996,791 is that claims 44, 46 and 47 in 10-996,791 describe the temperature; gas hourly space velocity and water:carbon ratio in the same process, however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because it is reasonably expected that the same process will inherently operate at the same claimed temperatures; gas hourly space velocity and water:carbon ratios. Please note that the courts have already determined that mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention: please see the discussion of the *In re Wiseman* 596 F.2d 1019, 201 USPQ 658 (CCPA 1979) court decision set forth in section 2145(II) in the MPEP, 8th Ed., Rev. 3, Aug. 2005.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

None of the claims have been rejected under either 35USC102 or 35USC103 because none of the references of record in this application teach or suggest the claimed method for converting a carbon-based fuel into a hydrogen-rich product gas, comprising the steps:

- (a) providing a carbon-based fuel;

- (b) converting the carbon-based fuel into an intermediate gas product by contacting the carbon-based fuel with at least a first conversion catalyst;
 - (c) contacting said intermediate gas product with an absorbent material to absorb CO₂ and form a H₂-rich gas;
 - (d) extracting said H₂-rich gas from said contacting step;
 - (e) regenerating said absorbent, and
 - (f) repeating said steps (a), (b), (c), (d) and (e) at least about 10 times,
- wherein said absorbent material retains at least about 50 mol. % of said theoretical absorption capacity after each of said repeating steps, as set forth in applicants' claim 1 and the claims dependent thereon.

None of the references of record teach or suggest the claimed method for converting a carbon-based fuel into a hydrogen-rich product gas, comprising:

- (a) providing a carbon-based fuel;
 - (b) converting the carbon-based fuel into an intermediate gas product by contacting the carbon-based fuel with at least a first conversion catalyst;
 - (c) contacting said intermediate gas product with an absorbent material to absorb CO₂ and form a H₂-rich gas;
 - (d) extracting said H₂-rich gas from said contacting step;
 - (e) regenerating said absorbent, and
 - (f) repeating said steps (a), (b), (c), (d) and (e) at least about 10 times,
- wherein the total mass of absorbent material retains at least about 10 grams of carbon

dioxide per 100 grams of unreacted absorbent after each of said repeating steps, as set forth in applicants' claim 29 and the claims dependent thereon.

None of the references of record teach or suggest the claimed method for converting a carbon-based fuel into a hydrogen-rich gas, comprising the steps:

- (a) providing a carbon-based fuel and steam;
- (b) converting said carbon-based fuel and said steam into an intermediate gas product by contacting with at least a first conversion catalyst;
- (c) contacting said intermediate gas product with an absorbent material to absorb carbon dioxide and form a hydrogen-rich gas, said absorbent material having a theoretical absorption capacity and wherein at least said absorbent material is pelletized;
- (d) extracting said hydrogen-rich gas from said contacting step;
- (e) regenerating said absorbent, and
- (f) repeating said steps (a), (b), (c), (d) and (e) at least 50 times, wherein said absorbent material retains at least about 20 mol.% of its theoretical carbon dioxide absorption capacity after each of said repeating steps, as set forth in applicants' claim 62 and the claims dependent thereon.

None of the references of record teach or suggest the claimed method for absorption enhanced reforming of a carbon-based fuel, comprising:

- (a) providing a carbon-based fuel;
- (b) contacting said carbon-based fuel with at least a first conversion catalyst to catalyze the formation of an intermediate gas product;

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(c) contacting said intermediate gas product with a pelletized absorbent compound having a first bulk density, wherein said pelletized absorbent is converted to a carbonized absorbent having a second bulk density, and

(d) regenerating said carbonized absorbent to form a regenerated absorbent having a third bulk density, wherein said third bulk density is greater than said first bulk density, as set forth in applicants' claim 84 and the claims dependent thereon.

The following references are made of record:

U. S. Patent Application Pub. No. US 2005/0232856 A1 disclosing reforming with hydration of carbon dioxide fixing material;

U. S. Patent Application Pub. No. US 2004/0136901 A1 disclosing a process for the catalytic conversion of a gasoline composition;

U. S. Patent Application Pub. No. US 2004/0126316 A1 disclosing a process and apparatus for generating hydrogen from oil shale;

U. S. Patent Application Pub. No. US 2003/0035770 A1 disclosing a process for separating synthesis gas into hydrogen and sequestration ready carbon dioxide;

U. S. Patent 6,824,576 B2 disclosing a hydrogen produced from heterocyclic compounds, and

U. S. Patent 6,669,917 B2 disclosing a process for converting coal into fuel cell quality hydrogen and sequestration ready carbon dioxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy C Vanoy
Timothy C Vanoy
Patent Examiner
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